

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2005/000440

International filing date (day/month/year)
10.02.2005

Priority date (day/month/year)
10.02.2004

International Patent Classification (IPC) or both national classification and IPC
C12Q1/68

Applicant
SOLEXA LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING AUTHORITY**

International application No.
 PCT/GB2005/000440

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/000440

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-31,37-49
	No: Claims	32-36
Inventive step (IS)	Yes: Claims	
	No: Claims	1-49
Industrial applicability (IA)	Yes: Claims	1-49
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2005/000440

Re Item I**Basis of the report****Re Item V****Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: WO 01/57249 A

D2: WO 01/62982 A

D3: US-A-5 654 413

D4: WO 98/44151 A (

D5: NAKANO M. ET AL.; J. BIOTECHNOLOGY, vol. 102, 2003, pages 117-124,

The subject-matter of claim 1 refers to the amplification of single target molecule within a vesicle. The amplicons are then immobilised on a solid support in a clustered manner. Document D5 describes the use of vesicles which are generated by a W/O emulsion and which are used for the amplification of single target molecules. The present subject-matter is distinguished by D5 by immobilizing the amplified target sequences on a solid support. The prior art already provides methods for the immobilization of nucleic acid sequences on a solid support to form spatially addressable arrays, see the disclosure of D1-D4, which therefore is considered to be a routine procedure in the field of array construction. No additional structural and/or functional technical feature in the present claimed method could be identified with respect to the cited prior art which is responsible for a special technical effect. The requirements of Article 33(3) PCT are thus not fulfilled. The same holds true for the subject-matter of claims 2-31, 38-49.

The subject-matter of claim 32 is not novel (Article 33(2) PCT).

Vesicles for amplifying single target molecule are described in D5. The disclosure of D5 therefore is considered to fall within the scope of claim 32. Novelty can therefore not be acknowledged. The same holds true for claims 33-36.

The subject-matter of claim 37 is considered to describe a common structural variation of

amplicon which are used for immobilization. An inventive step for claim 37 can therefore not be acknowledged.

Re Item VIII

Certain observations on the international application

Claim 1 is not clear (Article 6 PCT). The expression "clonal copies" is considered to be not common in this technical field and therefore renders the scope of the claim unclear. Furthermore the step of producing "clonal copies" in a chamber or vesicle on the surface of a solid support is not defined by a use of components and structural features-therefore renders the scope of the method unclear.

The scope of the claim is thus not defined in such a way as to allow the skilled person to understand, without undue burden, which components are to be used in the claimed method. Furthermore no support for the claimed method, contrary to the requirements of Article 5 PCT, are given in the description for carrying out the amplification by using chambers/vesicles which are in contact with the solid support during the amplification step(see Figures 1-3).

- The subject-matter of claim 32 is not clear (Article 6 PCT). The expressions "bulk phase" and interface are not defined by structural feature and therefore renders the scope of the claim unclear.
- The subject-matter of claim 38 is not clear (Article 6 PCT). The components of the kit are not defined by structural features and therefore renders the subject-matter for which protection is sought unclear.